

REMARKS

Claims 1-16 remain pending after amendment, with claims 5-12 being withdrawn from consideration.

Claim Amendments

By this amendment, claim 1 is amended, support for which resides at page 8, first paragraph, and page 12, first paragraph. New claims 14-16 are added. Support for new claims 14-16 resides at least at page 12, first paragraph and Figures 1A and 1B of the specification. No new matter is added by this amendment.

Rejection of Claims 1-3, 11 and 13 under 35 USC 103(a)

Claims 1-3, 11 and 13 stand rejected under 35 USC 103(a) as being unpatentable over Fukuda et al '219 in view of Dutta et al '969 and the Kingery et al publication. This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

In response, claim 1 is amended to state that the recited "surface" is a "top surface". It is apparent to one of ordinary skill in the art that "top surface" means the upper boundary of the raw material melt in the claimed invention.

Applicants believe that the rejection is based on the Examiner's interpretation of "surface" as including a boundary between the raw material melt and the solid raw material (see

page 7 of Official Action). In view of the amendment of claim 1 to recite "top surface" (which amendment now precludes such an interpretation), and the fact that the Examiner fails to present a prima facie case of obviousness, the rejection is without basis and should be withdrawn.

Rejection of Claim 4 under 35 USC 103(a)

Claim 4 stands rejected under 35 USC 103(a) as being unpatentable over Fukuda et al '219 in view of Dutta et al '969, the Kingery et al publication, and Taniguchi et al '763. This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

Applicants' amended claim 1 clearly distinguishes over the cited prior art - i.e., one of the features of the claimed invention is to leave solid raw material in the raw material melt so that the raw material melt is prevented from being supercooled.

In other words, the solid raw material functions as a supercooling inhibitor by preventing the liquid thereof from supercooling, when the solid is left in the liquid.

None of Fukuda, Dutta or Taniguchi disclose or suggest the present invention. The cited references fail to teach or suggest the problem of supercooling. Indeed, the Examiner fails to present a *prima facie* case of obviousness.

The basis of the Examiner's rejection is not based on the combination of Fukuda's solid raw material and Taniguchi's top surface nucleation. Instead, the Examiner relies on the combination of Dutta's encapsulant and Taniguchi's top surface nucleation.

In Fukuda's fifth method, nucleation and crystallization occurs at a boundary between the raw material melt and the remaining raw material. At this point, the solid raw material is formed so that it works as a seed crystal.

On the other hand, Taniguchi discloses nucleation and crystallization at the top boundary of the raw material melt in the absence of a seed crystal. It is not reasonable to assert that one of ordinary skill in the art would employ Taniguchi's top surface nucleation, while expecting Fukuda's solid raw material to function as a seed crystal. With regard to nucleation, Fukuda's solid raw material and Taniguchi's top surface nucleation are contradictory to each other.

In the claimed invention, the solid raw material is not used as a seed crystal where nucleation and crystallization occur, but is instead used to prevent the raw material melt from supercooling. As a result, since none of the references teaches or suggests the problem of supercooling and the solid raw material used as a supercooling inhibitor, the claimed invention

is neither suggested by nor rendered obvious in view of the cited prior art.

The rejection is accordingly without basis and should be withdrawn.

New Claims 14-16

New claims 14-16 are added directed to additional embodiments of applicants' invention that are neither suggested nor disclosed by the cited prior art. Accordingly, claims 14-16 should be found to define patentable subject matter.

The application is in condition for allowance and an early indication of same is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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